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Leveraging social norms for sustainable behaviour: How the exposure to static-and-dynamic-norms encourages sufficiency and consumption reduction of fashion

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ABSTRACT

Contemporary communication platforms, ranging from social media to traditional news outlets, frequently present static norms, reflecting established behaviours (e.g., eating meat, drinking alcohol at parties) in combination with dynamic norms that signal evolving societal trends (e.g., adopting more plant-based diets, attending alcohol-free events). Despite the widespread exposure to such combined static-and-dynamic-norm communications, its influence on consumer behaviour remains unexplored. This research addresses this gap by conducting two laboratory experiments to investigate the impact of static-and-dynamic-norm communications on sustainable behaviour towards reduction of fast fashion consumption.

The results demonstrate that participants exposed to the combination of unsustainable static and unsustainable dynamic norms purchased significantly fewer fashion items than those in other experimental conditions. This behavioural change is affected by a process of *social moral cleansing*, wherein participants, upon confronting with the widespread unsustainable behaviour of others, experienced a highlighted motivation to counteract these behaviours by acting more sustainably themselves. These findings contribute to the growing literature on social normative influence in sustainable consumption contexts. By identifying a novel and effective normative communication strategy for reducing consumption, this research offers valuable insights for researchers, designers and policy makers seeking to promote sufficiency-oriented behaviour and foster long-term sustainable behavioural change.

1. Introduction

In our increasingly digital world, we find ourselves exposed, almost constantly, to other people's lives, including how they commonly behave and what they believe as typical and appropriate behaviour. From a theoretical perspective, we are constantly exposed to the so called social norms, and more precisely to static and dynamic norms. While static social norms indicate those sets of values, beliefs and behaviours that are perceived as typical and acceptable up to now, dynamic norms signal behaviours that are becoming increasingly popular over time (Bicchieri, 2006; Carrillo, 2022; Loschelder et al., 2019; Mortensen et al., 2019; Sparkman & Walton, 2017).

Contemporary media environments, from social media to newspapers, are dense of examples where static practices, showing the norm up to now (e.g., eating meat, drinking alcohol at parties, excessively purchasing of fashion) are combined with dynamic trends in society,

showing which behaviour is becoming more common within a social group (e.g., adopting more plant-based diets, attending alcohol-free events, purchasing even more excessively). For example, a recent article from the newspaper The Guardian, states: "Until recently, 67 % of Brits have engaged in monthly drinking ... young adults would reach for a drink at parties to fit in socially (static norm). However, more and more young people are choosing not to drink, increasingly engaging in "dry events". Welcome to the era of sober-curious ..." (dynamic norm) (Segalov, 2023).

Such narratives are also reflected in sustainability discussions where static and dynamic social norms are combined in the same piece of communication to raise awareness of the impact of human behaviour on the environment. An example is represented by the BBC documentary (and homonymous book) "A Life on Our planet" where the unsustainable static norm messages (e.g., for decades, people used coal and oil to power their homes) are emphasized in combination with more sustainable

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dynamic norm messages (e.g., *society is embracing renewable energy solutions, which are becoming more and more common*) (Attenborough, 2020).

Despite frequent exposure to these combined static-and-dynamic-norm communications, we lack an understanding of the effect of such exposure on our behaviour. While in the context of environmental research, studies on the effects of static-only or dynamic-only messages on pro-environmental decisions have been expanding (Borg et al., 2020; Loschelder et al., 2019; Pristl et al., 2021; Sparkman & Walton, 2017; Thomas & Sharp, 2013; Yamin et al., 2019), we lack an understanding of the combined effect of static and dynamic information. This understanding holds crucial importance, particularly when promoting sustainable behaviour. In a world where encounters with different forms of unsustainable behaviours (e.g., littering, prematurely discarding of products, or over-consumption of fast fashion) are common, normalized and often accepted, it becomes important to understand how exposure to others' unsustainable behaviours influences the likelihood of conforming to or diverging from these norms. Furthermore, since unsustainable behaviours can be framed as both the static and the dynamic norm, thereby creating alignment between the two, or as the dynamic norm in contrast to a more sustainable static norm, and vice versa, resulting in a mismatch, it is essential to explore how these different combinations of static and dynamic norms influence consumer behaviour. In fact, different types of norm combinations with a matching or mismatching sustainability framing may lead to varying effects on sustainable behaviour.

This research contributes to this gap by examining the effect of combining (sustainable or unsustainable) static and (sustainable or unsustainable) dynamic social norms in promoting more sustainable behaviour, and in particular, in promoting sufficiency in the context of fashion (associated with “buy less”, “buy parsimoniously”, “buy only what you need”) (Allaby & Park, 2013; Ehrlich & Goulder, 2007; Speck & Hasselkuss, 2015). Although sufficiency has been largely acknowledged as an indispensable strategy for sustainable development, increasingly gaining attention in the scientific and political sphere (Change, 2014; Hotta et al., 2021; Koide et al., 2021; Wiese et al., 2022), interventions that directly address sustainable behavioural change towards sufficiency and reduction of excessive consumption have been scarce (Lage, 2022). These interventions are urgently needed in many sectors (e.g., mobility, durable products) but especially, in the fashion sector, where reducing consumption is by far the most effective and impactful strategy for climate action, far more than promoting “greener practices” (MacKinnon, 2021). While “greener” fashion lines require energy intensive production, distribution and disposal processes, reducing consumption directly lessens carbon emissions. For example, extending the life of clothes by just nine months can reduce their environmental impact by up to 30 % in terms of carbon, water and waste footprints (Maxwell & Williams, 2011; Phillips, 2008).

Therefore, using this rather overlooked but crucial context of sufficient consumption in fashion, this research aims to answer the following research questions: “How does the exposure to static and dynamic social norm communications with a matching or mismatching sustainability framing influence sustainable behaviour towards sufficiency in fashion?” and “Which combinations of static and dynamic social norms are more effective in promoting more sustainable practices?”.

This research provides theoretical, practical and societal implications. Theoretically, this research advances the understanding of the combined impact of static and dynamic norm communications on consumer behaviour, filling a critical gap in prior studies that examined static-only or dynamic-only normative influences (Aldoh et al., 2024; Loschelder et al., 2019; Sparkman & Walton, 2017). By doing so, this research provides a robust evidence-based foundation for the widespread practice in communication channels to present established static behaviours and emerging dynamic trends simultaneously. At a practical level, this research highlights the impact of norm-based communications on immediate consumer decision-making—an insight particularly

relevant to the rapidly growing field of social e-commerce. In this context, shopping decisions can occur almost instantaneously in response to perceived normative behaviours (e.g., selecting and purchasing an outfit immediately after exposure to normalized fashion practices). This is especially pertinent within the fashion sector, where e-commerce accounts for 64 % of global consumer activity as of 2024 (Capgemini, 2025). Furthermore, by differentiating the effects of various combinations of (sustainable/unsustainable) static and dynamic norms and by suggesting which combinations are more effective in promoting sustainable practices, this research provides societal implications. Specifically, it may provide policymakers with actionable insights on social norm based interventions to foster sustainable practices in the fashion industry, which stands as the second-most polluting industry globally, after the oil and gas sector (Choi & Lee, 2024).

2. Theoretical background

2.1. The effect of static and dynamic social norms on sustainable behaviour

Communication represents a crucial mean through which we disseminate and learn social norms, those implicit and explicit rules that indicate what behaviours, values and beliefs are standard and acceptable within a social group (Aronson et al., 2005; Perkins, 2003). While several theories, such as focus theory (Cialdini et al., 1990), the reasoned action approach (Fishbein & Ajzen, 1977), and the theory of normative social behaviour (Rimal & Real, 2005) provide ample insights into how norms influence behaviours, gaps in this understanding still remain (Davis et al., 2015; Thøgersen, 2006; White & Simpson, 2013; Yamin et al., 2019). Existing social norm theories focus almost entirely on static norms, which indicate typically performed or desirable behaviours at a given point in time, also referred to as descriptive and injunctive norms, respectively (Cialdini, 2007; Sparkman & Walton, 2017). Such a focus has been claimed limited as it tends to overlook the dynamic nature of societal approval of behaviour, which changes over time (Loschelder et al., 2019; Sparkman & Walton, 2017).

Attempts to bridge this gap and go beyond the study of static norms, are evident in a growing body of research on dynamic norms, i.e., behaviours that become increasingly popular over time, within a specific group, whether majority or minority (Sparkman & Walton, 2017). Although research on dynamic norms is still scarce, it is particularly flourishing in pro-environmental contexts, where promising effects have been found in successfully influencing pro-environmental behaviour (Aldoh et al., 2024; Carrillo, 2022; Ceschi et al., 2021; Demarque et al., 2015; Loschelder et al., 2019; Mortensen et al., 2019; Sparkman & Walton, 2017). For example, in a study on meat consumption, dynamic norms messages, emphasising that a growing part of Americans were making an effort to eat less meat, increased participants' likelihood to conform to this emerging behaviour (Sparkman & Walton, 2017). This dynamic effect was higher than the effect of an equivalent static norm message, which highlighted the meat reduction behaviour at a given point in time, without reference to a change. Similarly, participants who were exposed to a dynamic norm signalling a low but increasing prevalence of water conservation behaviours, used significantly less water when brushing their teeth than those who were exposed to the static norm (Mortensen et al., 2019).

While several studies investigate the effectiveness of dynamic-only messages, compared to static-only messages (e.g., Loschelder et al., 2019; Sparkman & Walton, 2017), research on the combined effect of static-and-dynamic norm communications varying on sustainability framing (e.g., unsustainable static + unsustainable dynamic vs unsustainable static + sustainable dynamic) is lacking. This focus is relevant as when people are exposed to the combination of static and dynamic norms, they learn about two different behaviours that co-exist: *one static practice* from which we may infer what behaviours are common and approved, and *one dynamic trend*, from which they may infer what

behavioural changes are possible, who are engaging in these changes and whether these changes may become popular in the future. All these inferences from the combined effect of static and dynamic norms may influence how people interpret these behaviours and whether they will be more likely to conform or deviate from the normalized behaviour presented.

In examining the combined effect of static and dynamic norms, a first step is represented by a recent research in the context of plant-based food consumption (Malta et al., 2024). This study compared the impact of sustainable static-only, sustainable dynamic-only and the combined sustainable static + sustainable dynamic norm messages on consumer beliefs, intentions, and policy support. Their findings indicated that consumers were more likely to endorse the target belief about the importance of plant-based food when exposed to the combined norm message compared to isolated norm condition. However, important gaps remain on 1) how the combination of static and dynamic norms influences actual sustainable behaviour, beyond beliefs and intentions, and 2) which specific combinations of unsustainable versus sustainable static and dynamic norms are most effective in shaping behavioural outcomes. This is important to research as, in the combination of static and dynamic norms, the two co-existing norms may either align and have a matching framing (both framed as sustainable/unsustainable), or diverge and have a mismatching framing (one framed as sustainable and the other as unsustainable or vice versa). This results in a variety of possible static-and-dynamic-norm combinations, which may be differently effective in promoting sustainable behaviour. To date, no research has integrated and compared all the different combinations, leaving it unclear how static and dynamic social norms can successfully drive meaningful, sustainable behavioural changes, and what real leverage they may hold in advancing the sustainability transition. In particular, it remains unexplored whether the exposure to a sustainable (or unsustainable) static norm combined to a sustainable (or unsustainable) dynamic norm leads to conformity to or differentiation from the norm presented. In this regard, existing theoretical perspectives offer contradictory predictions, one supporting the hypothesis that individuals will conform to the static and dynamic norm presented (i.e., norm-behaviour conformity) and another in support to its opposite, namely that individuals will differentiate from the static and dynamic norm which they are exposed to (i.e., norm-behaviour differentiation). While the *norm-behaviour conformity* hypothesis is theoretically supported by the norm-focus theory and the principle of social proof (section 2.2.1), the alternative hypothesis of *norm-behaviour differentiation* finds theoretical ground in the moral licensing and cleansing theories (section 2.2.2).

2.2. Sustainability framing in social norms

2.2.1. The principle of social proof: norm-behaviour conformity

According to norm-focus theory and the principle of social proof, people have the tendency to reproduce and conform to the behaviour which they are exposed to, as, by observing other's people behaviour, whether positive or negative, they learn what is normal and accepted in that specific context (Bicchieri, 2016; Cialdini et al., 1990; Lahlou, 2018). Research centred on the Broken Window theory has largely demonstrated the formula "bad behaviour leads to bad behaviour", where citizens exposed to signs of crime, such as broken windows, engaged in significantly higher acts of crime than those who were not exposed (Wilson & Kelling, 2015). Within the sustainability domain, research has shown the contagious effect of unsustainable behaviour, where people littered more when exposed to a littered and dirty environment than when exposed to a clean environment (Ceschi et al., 2021). The same holds true for the opposite, as exposing consumers to a positive sustainable behaviour or normalising a sustainable behaviour made consumers conform to the presented (sustainable) norm (Goldstein et al., 2008; Nisa et al., 2017; Sparkman et al., 2021). In general, norm-behaviour conformity has been shown in various environmental contexts, including waste reduction, purchase behaviour of

green items, recycling, renewable energy adoption and sustainable transport use (Demarque et al., 2015; Goldstein et al., 2008; Hopper & Nielsen, 1991; Jaeger & Schultz, 2017; Kormos et al., 2015; Pellerano et al., 2017; Schultz et al., 2016; Yamin et al., 2019).

While these studies support the hypothesis that the exposure to a norm, whether sustainable or unsustainable, leads to behaviour conformity, alternative perspectives in sustainability research may suggest otherwise. In particular, the principle of social moral licensing (Lasarov & Hoffmann, 2020) and its reverse effect called moral cleansing (Sachdeva et al., 2009) suggest that when consumers perceive a strong signal that others engage in sustainable or unsustainable behaviours, they tend to deviate from the positive or negative examples set by others, behaving differently in return. Such a perspective may be particularly relevant in the context of this research, as the exposure to the combination of static and dynamic norms may function as such a strong signal able to trigger a licensing or cleansing effect.

2.2.2. The principles of social moral licensing and social moral cleansing: norm-behaviour differentiation

Moral licensing and its reverse effect, known as moral cleansing, describe behavioural patterns in which a person's prior moral (or immoral, in the case of cleansing) behaviour is followed by subsequent immoral (or moral in the case of cleansing) behaviour by the same individual (Blanken et al., 2015; Monin & Miller, 2001; Sachdeva et al., 2009; Tetlock et al., 2000; Tiefenbeck et al., 2013). While these effects have been primarily examined within the domain of self-behaviour regulation, focusing on how individuals respond to their own past behaviours, emerging evidence suggests that similar dynamics may operate in social norm contexts. Specifically, moral licensing and cleansing can also function as mechanisms of group-based behavioural regulation, whereby individuals respond to the sustainable or unsustainable actions of others within their social environment (Lasarov & Hoffmann, 2020; Meijers et al., 2019). This suggests a broader applicability of moral regulation processes beyond the individual level, extending into collective and normative domains.

In particular, the principle of *social moral licensing* suggests that, in certain circumstances, consumers interpret the behaviour of others as a moral license that liberates them from behaving morally (Lasarov et al., 2022; Lasarov & Hoffmann, 2020). This particularly happens when consumers perceive a strong signal that others engage in sustainable behaviours. As a result of this signal, consumers conclude that environmental protection is nearly within reach, and that their personal contribution is less needed and less urgent (Lasarov et al., 2022; Lasarov & Hoffmann, 2020; Merritt et al., 2010). Construed as a social moral license, this signal is likely to dampen or even overturn consumer intention to behave sustainably (Lasarov et al., 2022). In the context of our research, the combination of a sustainable static norm with a sustainable dynamic norm could function as a strong signal, as it would doubly emphasize sustainable behaviours of others. Consequently, this could trigger a sense of complacency and lack of urgency, licensing consumers to deviate from the positive example set by others.

Similar to the moral licensing effect, which has been extended from the individual level to the collective level, a parallel extension may apply to the reverse phenomenon of moral cleansing. Moral cleansing, or moral compensation, refers to behaviours aimed at restoring one's moral self-worth following past transgressions (West & Zhong, 2015). To date, this effect has been studied almost exclusively at the individual level, as a self-regulatory strategy in response to one's own immoral actions (Bañas-Garza et al., 2013; Gholamzadehmir et al., 2019; West & Zhong, 2015). The present research extends this perspective by introducing a collective dimension—proposing that *social moral cleansing* may occur when individuals engage in pro environmental actions to compensate for unsustainable behaviours observed in others within their social environment. In the context of our research, social moral cleansing may occur when consumers are exposed to the combination of an unsustainable static and an unsustainable dynamic norm, which would

activate a strong signal of urgency to “clean” and compensate for the bad behaviour of others. As a result of this norm-behaviour regulation, consumers may behave differently from the norm presented, leading to a higher sustainable behaviour.

To conclude, existing theoretical perspectives suggest contradictory predictions on the effect of static-and-dynamic norm communications. On the one hand, the principle of social proof supports the following prediction: *“the combination of static and dynamic norms with a matching sustainability framing (both norms signalling a sustainable or unsustainable behaviour) leads to behaviour conformity to the norm presented”*. On the other hand, the principles of social moral licensing and social moral cleansing support an opposite prediction: *“the combination of static and dynamic norms with a matching sustainability framing leads to behaviour differentiation from the norm presented”*. The combined effect of static and dynamic norm would function as a strong signal of either license and inertia, or cleansing and urgency, motivating consumers to behave differently from the established (sustainable or unsustainable) norm.

More specific expectations could also be formulated about the effect of combining static and dynamic norms with a mismatching framing. For instance, these predictions might explore whether pairing a sustainable static norm with an unsustainable dynamic norm—implying a shift towards worse behaviours—would be more or less effective than pairing an unsustainable static norm with a sustainable dynamic norm that suggests positive change. Other predictions could test, for example, whether a purely negative scenario (unsustainable static + unsustainable dynamic) is more or less influential than a scenario that presents a glimmer of hope—where an unsustainable static norm is countered by a dynamic norm suggesting improvements (unsustainable static + sustainable dynamic). Again, the different theoretical perspectives of social proof and social moral licensing/cleansing would offer contradictory predictions. The principle of social proof would suggest the following hypothesis: *consumers exposed to the “unsustainable static + unsustainable dynamic” condition will behave less sustainably than consumers exposed to the “unsustainable static + sustainable dynamic norm” condition, as they will feel a strong signal to conform to the normalized and accepted unsustainable behaviour of others*. On the contrary, the principle of social moral cleansing would support the opposite prediction: *consumers exposed to the “unsustainable static + unsustainable dynamic” condition will behave more sustainably than consumers exposed to the “unsustainable static + sustainable dynamic norm” condition, as they will feel a strong signal to “clean”, regulate and differentiate from the unsustainable behaviour of others*.

2.3. The current research

Contributing to the above-mentioned conflicting predictions and to the social norms literature that has predominantly studied static-only or dynamic-only normative influences, this research aims to explore the effect of exposing consumers to static-and-dynamic social norm communications with a matching and mismatching sustainability framing on sufficient consumption in the context of fashion. Thereby, this research demonstrates which of the four combinations of (sustainable/unsustainable) static and (sustainable/unsustainable) dynamic norm are more effective in promoting sustainable practices and the reasons for this effectiveness. This paper tested these effects through two lab studies. Study 1 tested the main effect of the specific combinations of static and dynamic norm communications on the number of fashion items chosen by respondents in a fictitious web-shop of clothes, as proxy of (un)sustainable behaviour. Study 2 replicates these effects and explores the potential mediating role of social moral cleansing and social moral licensing as two related norm-behaviour regulation strategies (Fig. 1).

Study 1 and 2 took place in a lab setting in the Netherlands and were approved by the Ethical Committee of Delft University of Technology.

Study 2 was pre-registered (#196402 AsPredicted¹). G-power calculations were conducted for both studies, suggesting a minimum sample size of 176 participants to achieve a sufficient power (≥ 0.80) for detecting a medium effect size ($f = 0.25$) at a significance level of $p < .05$ (G*Power 3) (Faul et al., 2007). Study 1 and 2 followed the same procedure: upon entering the lab, participants were asked to sit at a computer desk, read and agree to an informed consent and were randomly assigned to one of four between-subjects experimental conditions, including the combination of (unsustainable vs sustainable) static + (unsustainable vs sustainable) dynamic social norms. They were instructed to evaluate a web shop of clothes, after being exposed to the manipulation of social norms and to shop as they would have normally done. Upon completion of the experiment, participants were offered a chocolate bar as a thank-you gift for study 1 and a chocolate bar and 5 euro voucher for study 2.

3. Study 1

3.1. Methods

3.1.1. Participants

A total of 292 participants were recruited from [blinded for reviewers] University. After excluding 19 participants who did not pass both attention checks integrated in the study, a final sample of 273 participants was used for the data analysis (54.9 % female; $M_{age} = 22.8$ years old). Data collection for study 1 took place across three days in January 2024.

3.1.2. Manipulations of the static and dynamic norm communications

To study the effect of static-and-dynamic norm communications on sufficient fashion consumption, a fictitious web shop of clothes was created containing a 40-seconds movie that represented the manipulation of static and dynamic norms. Respondents were asked to watch the movie before answering a series of questions. Four different movies for the four different experimental conditions were created that systematically differed in text (with voice recorded on top), colour, pictures and animations. The videos started with the presentation of the static norm, following the dynamic norm on a follow-up page/animation. The sustainable (unsustainable) static norm stated: *“Recent research has shown that currently 80 % of consumers (do not) make an effort to limit the amount of clothes they buy, purchasing only the clothes they need (more clothes than they need)”*. This text was followed by the sustainable (unsustainable) dynamic norm: *“And (but) they are changing their behaviour; more and more consumers are engaging in sufficient consumption (over-consumption), purchasing less (more) clothes than before and only (more than) what they really need”* (Fig. 2). All texts were adapted from previous manipulations of social norms (Loschelder et al., 2019; Sparkman & Walton, 2017; Yamin et al., 2019). The text was highlighted in red for the unsustainable norm versus green for the sustainable norm and was accompanied by 1) two images representing overconsumption versus sufficient practices in fashion and 2) an animation depicting a wardrobe of clothes getting fuller (vs. emptier) and some shoppers with a high (vs. low) number of shopping bags (Fig. 2). To stress the transition between the static and dynamic norm, some elements of the animations changed (for example, the wardrobe was becoming fuller or emptier and the shoppers were holding more or fewer bags in their hands; links on the movies are available in Table A.1; Appendix A). No control condition was included given prior evidence supporting the positive effect of normative messages (e.g., Malta et al., 2024) and the research questions of the present study (i.e., exploring the relative effectiveness of static + dynamic norm communications varying on sustainability framing).

¹ <https://aspredicted.org/92dw-b688.pdf>.

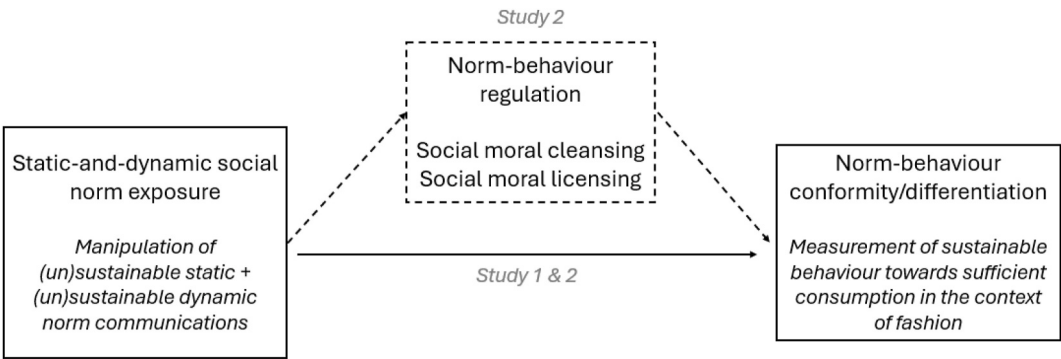


Fig. 1. Overview of the current research (study 1 and 2).

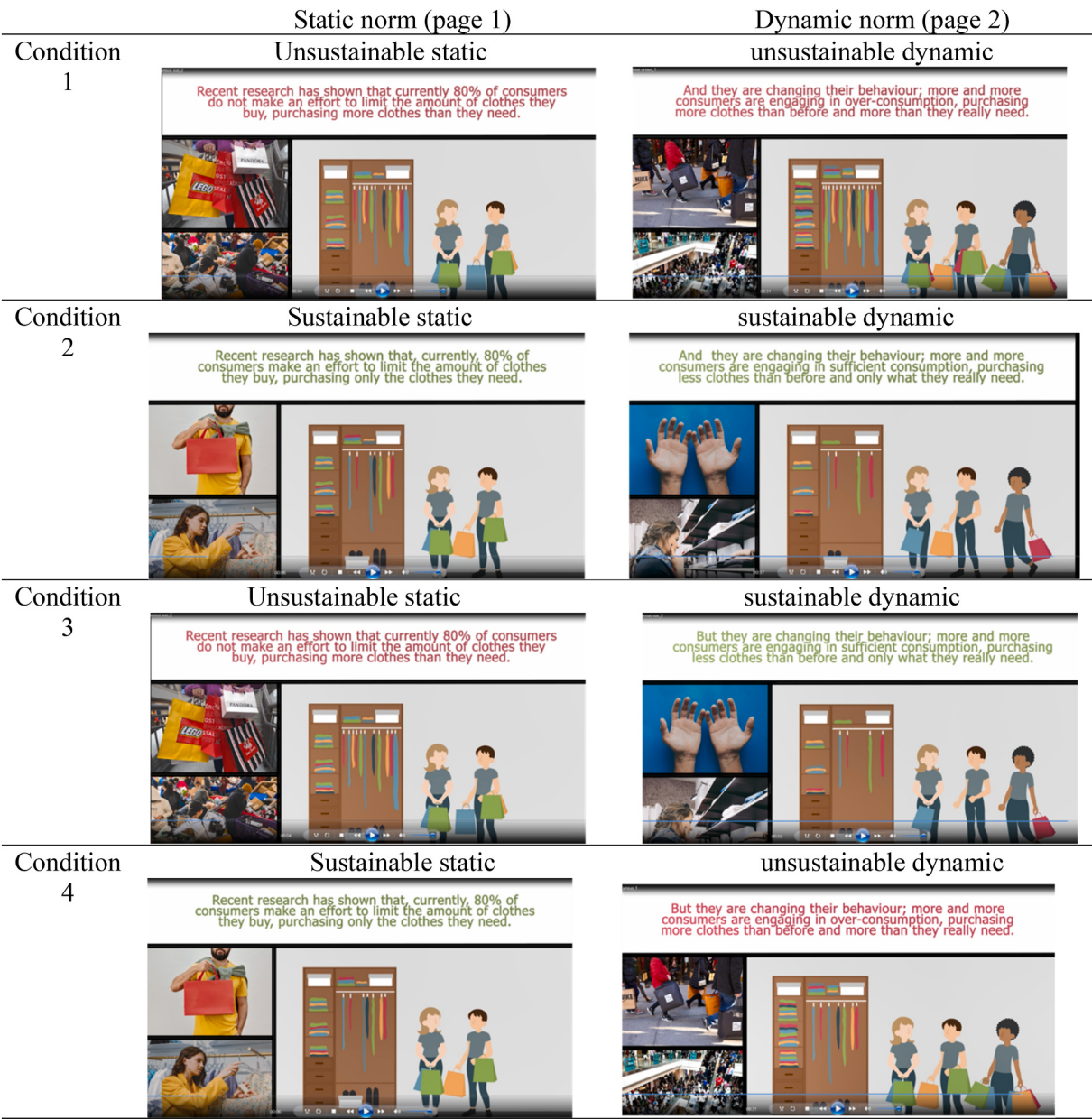


Fig. 2. Screenshots of the movie representing the manipulation of static and dynamic norm communications. All conditions include the combination of (unsustainable vs sustainable) static and (unsustainable vs sustainable) dynamic norm.

3.1.3. Procedure and measures

After having watched the movie, respondents completed a manipulation reinforcement through an open-ended question as previously done by e.g., Van der Wal et al. (2018). This has the aim to make participants reflect on the manipulation (the short movie just watch). Then, respondents received the following instructions for the shopping task: “Please imagine that you have an upcoming event (a party, a job interview, etc.) or a normal day and you are interested in new clothes. You will be presented with 6 pages of clothes (for example, one page with jeans, one with shirts etc.). Shop like you would normally do and just choose what you like from the following assortment, with no budget restrictions. You can always go back to the previous page”. To make sure that respondents would not let their financial situation influence their decision making, it was stated that there were no budget restrictions. Respondents were then asked whether they wanted to shop in the men’s or women’s section and were presented with an assortment of clothes corresponding with their gender selection. A large assortment of clothes was created to guarantee variety, including a total of 54 pieces of clothes for each gender, divided in six pages (page of t-shirts, jeans, blouses, skirts etc.). The clothes were presented as in a standard web shop, including some product information and price (see examples in Fig. 3).

After completing the shopping task, respondents were asked a series of questions measuring the dependent variables, individual differences, manipulation and attention checks and control variables. The study ended with demographic questions.

Main measurements: Two dependent variables were recorded and analysed, namely the number of fashion items chosen by the respondents and a donation intention. First, the number of items that respondents put in the shopping basket was measured through the instruction “Please look at these clothes and select all the items you would like to add to your cart”. Selecting fewer items indicated a more sufficient and sustainable behaviour compared to selecting a larger number of items. Second, respondents answered a donation intention measure, used as a proxy for sustainable behavioural intentions, following the approach of e.g., Van Horen et al. (2018). Respondents were informed that they had €50 leftover, and they were asked whether they wanted to donate (some of) the leftover budget to the WWF (defined as “a non-profit organization that fights for conservation of nature and the environment”) or keep it and continue shopping. If respondents stated to be willing to donate, they were asked to specify how much they wanted to donate in a scale from 1 to 50 euro (Van Horen et al., 2018). If they stated that they were not willing to donate, they were directed to an extra page of clothes and they could continue shopping.

Manipulation check: To assess whether the manipulations of the static and dynamic norms were perceived as intended and significantly different from each other, participants were asked to rate whether the movie showed that ... “buying a lot has been traditionally ...” 1: not normal at all/not accepted at all, 7: very normal to do/very accepted to do; for the static norm, and “buying a lot is becoming ...” 1: less normal to do/less accepted to do, 7: more normal to do/more accepted to do; for the dynamic norm.

Attention checks: Two attention checks were included, one as an open question asking respondents to re-call the percentage of consumers who are/are not making an effort to buy less (an important detail of the manipulation of the static norm) and another one as a multiple-choice question asking whether consumers are becoming more or less sustainable (an important detail of the manipulation of the dynamic norm).

Control variables: To assess whether respondents recognized that the movie could have influenced their shopping behaviour, respondents were asked to rate two statements on a 7-point scale: “I think that the video ...” 1) “Encouraged me to buy” (1: many items, 7: few items) and 2) “Triggered me to buy ...” (1: much more than needed, 7: just as needed). Furthermore, the time that respondents spent on the shopping task was recorded, to control for variations across conditions.

Individual differences: As certain individual differences, such as people’s environmental concern or their usual shopping behaviour,

might affect the dependent variables, respondents were asked to complete a three items 7-point environmental concern scale (1: strongly disagree, 7: strongly agree) (Cervellon, 2012; Granato et al., 2022a) and a revised version of eight items 7-point Edwards Compulsive Buying Scale (1: strongly disagree, 7: strongly agree) (Edwards, 1993), measuring people tendency to overconsume and the compulsive trait of usual buying behaviour (Maraz et al., 2015). All items and reliability analysis are included in table B.1, Appendix B.

Demographics: Demographic questions such as age, gender and nationality were asked and recorded (see table B.2; Appendix B). Table 1 presents a summary of all measurements for study 1.

3.2. Results

3.2.1. Control and manipulation checks

Control checks: Statistical analyses indicated that respondents did not think that the movies could influence their shopping behaviour across conditions ($F(3, 292) = 1.53$; $p = .21$). In addition, the manipulation did not affect the time spent on the shopping task, as no differences across conditions were observed ($F(3, 292) = 0.37$; $p = .77$).

Manipulation check: Independent-samples t-tests showed that both manipulations were successful. Specifically, respondents who were exposed to sustainable static norms rated the practice of overconsumption as traditionally less normal and accepted ($M = 3.13$, $SD = 1.14$) than those exposed to the unsustainable static norm ($M = 4.14$, $SD = 1.46$; $t(271) = -6.38$, $p < .001$; Cohen’s $d = 1.31$). Similarly, respondents who were exposed to the sustainable dynamic norm rated the practice of overconsumption as becoming less normal and accepted ($M = 3.91$, $SD = 1.21$) than those exposed to the unsustainable dynamic norm ($M = 5.07$, $SD = 1.14$; $t(271) = -8.06$; $p < .001$; Cohen’s $d = 1.18$).

3.2.2. The effect of static-and-dynamic norm communications on sufficiency behaviour

To test the effect of the four static and dynamic norm communications on the number of items chosen by respondents, a 1x4 independent ANOVA was conducted ($F(3, 269) = 1.85$; $p = .14$; part $\eta^2 = 0.02$) with a post-hoc test to explore all possible pairwise differences among conditions and two planned contrasts to confirm the more explorative post-hoc test and test the specific, theoretically derived predictions² about sustainable versus unsustainable norm combinations.

Results of the post-doc test showed that respondents chose a lower number of fashion items when exposed to the combination of an unsustainable static and unsustainable dynamic norm ($M = 7.54$; $SD = 4.79$) than when exposed to the combination of an unsustainable static and sustainable dynamic norm ($M = 9.74$; $SD = 6.10$; $p = .020$, Fig. 4, panel a). No other differences between the other social norm communications were observed.

In addition to these exploratory post hoc comparisons, two planned contrasts were conducted: the first contrast compared the *sustainable static + sustainable dynamic* condition with the remaining three conditions and revealed no significant difference, $t(103.28) = 0.26$, $p = .80$, $d = 0.05$, $r = 0.03$. The second contrast compared the *unsustainable static + unsustainable dynamic* condition with the other three conditions and was significant, $t(138.61) = -2.08$, $p = .039$, $d = 0.35$, $r = 0.17$, indicating that participants in the unsustainable static + unsustainable dynamic condition selected fewer items than those in the other conditions.

In addition, results of an ANCOVA showed that the individual’s usual

² According to the social cleansing effect, the unsustainable static + unsustainable dynamic condition should lead to a higher sustainable behaviour (less N of items chosen) than the other three conditions. According to the social licensing effect, the sustainable static + sustainable dynamic condition should lead to a lower sustainable behaviour (higher N of items chosen) than the other three conditions.

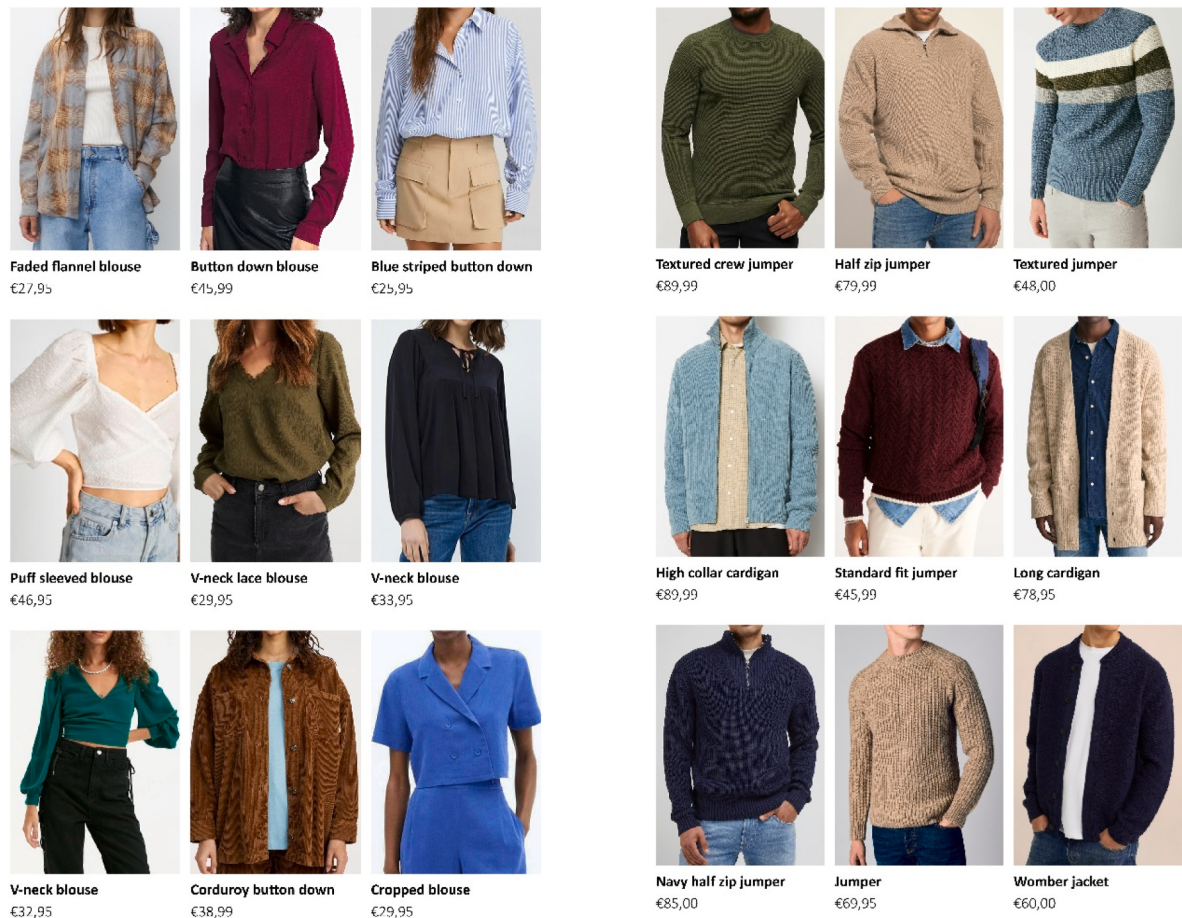


Fig. 3. Examples of clothes for the women (blouses) and men category (sweaters) in the web shop presented to respondents.

Table 1
Summary of the main measurements used in study 1 and 2.

Measurements	Study 1	Study 2
Dependent variables	1. N of fashion items chosen (sufficiency-related reducing) 2. Donation intention	1. N of fashion items chosen (sufficiency behaviour-reducing) 2. Second hand switching behaviour (sufficiency behaviour-reusing) 3. Reflection on behaviour restriction 4. Intention to support policy on consumption reduction 4-items scale for social moral cleansing 3-items scale for social moral licensing Emotional context for social moral cleansing (anxiety, stress, frustration) and social moral licensing (indifference, unconcern, discouragement).
Mediation measurements	Not used	Web shop user friendliness Liking of assortment Overall rating web shop Understandability of the news Realism of the news
Filler task	Not used	
Control variables	Recognition of study aim Time spent on shopping task	
Individual differences (covariates)	Environmental concern Usual shopping behaviour	Same as study 1
Demographics	Gender, age, nationality	Same as study 1

shopping behaviour ($F(1,273) = 10.72; p < .001$; part $\eta^2 = 0.04$) and age ($F(1,273) = 4.98; p = .03$; part $\eta^2 = 0.02$) significantly affected the number of fashion items chosen by the respondents, independently from the social norm intervention. Specifically, the higher the tendency to overconsume, the higher was the number of items chosen ($\beta = 0.19$; $t = 3.28$; $p < .001$). Similarly, the older the respondents, the lower was the number of items chosen ($\beta = -0.13$; $t = -2.22$; $p = .03$). No significant effects were observed for environmental concern and gender.

Together, the planned contrasts and post hoc tests suggest that the “unsustainable static + unsustainable dynamic” norm communication, which signals that the majority of consumers behave unsustainably and that this trend is changing for the worst, is more effective in encouraging consumers to buy less, particularly when compared to conditions that included a sustainable dynamic norm, signalling a change for the better.

For donation intention, a logistic regression analysis, showed no significant effect of social norm communications on donation intention ($B = -0.08$; $S.E. = 0.10$; $Wald = 0.53$; $df = 1$; $p = .46$).³

3.3. Discussion study 1

Results of study 1 showed promising insights into how exposing consumers to static and dynamic norm communications influences sustainable behaviour, towards a reduction in fashion consumption.

³ While the social norm interventions did not affect donation intention, environmental concern ($B = 0.33$; $S.E. = 0.08$; $Wald = 15.61$; $df = 1$; $p < .001$), tendency to overconsume ($B = -0.30$; $S.E. = 0.12$; $Wald = 5.88$; $df = 1$; $p = .015$) and (female) gender did ($B = 0.52$; $S.E. = 0.023$; $Wald = 5.26$; $df = 1$; $p = .02$).

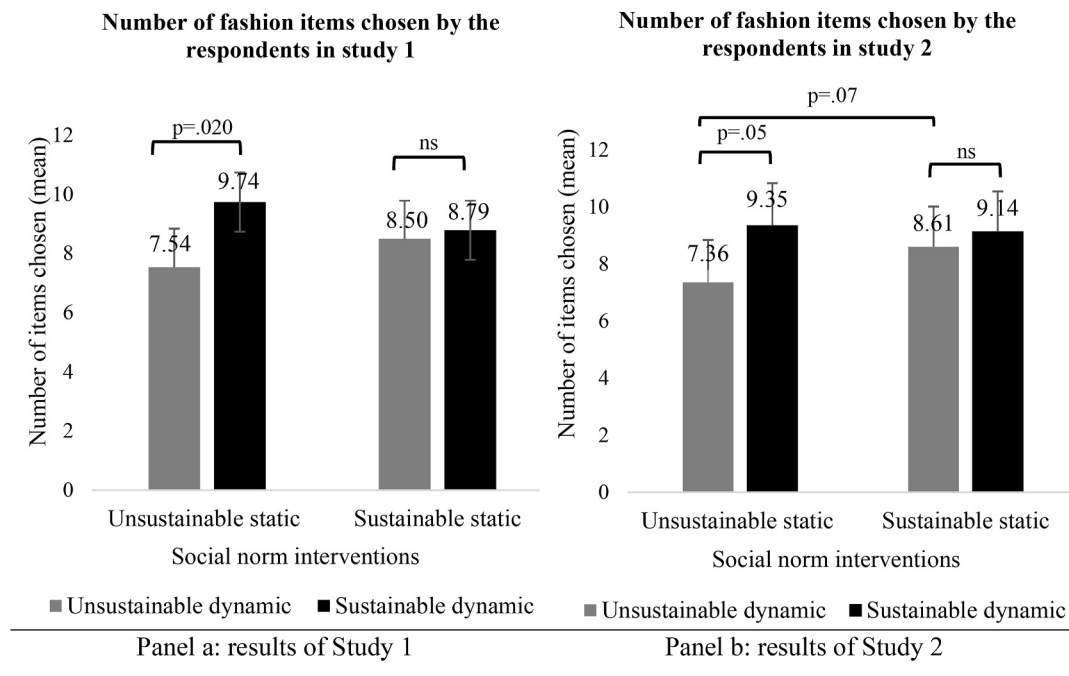


Fig. 4. Number of fashion items chosen by the respondents across the four static and dynamic norm communications in study 1 (panel a) and study 2 (panel b). NS = non significant. Error bars indicate 95 % confidence interval.

Respondents chose fewer fashion items when exposed to the combination of an unsustainable static and unsustainable dynamic norm. Despite the significant differences found, respondents still selected a high number of items across all conditions, highlighting a crucial challenge: while reducing consumption is a relatively attainable behavioural shift, achieving true sufficiency—consuming only what is necessary—remains a far more difficult step.

Study 1 enriches the current understanding on social norm effects by supporting the hypothesis of norm-behaviour differentiation, rather than conformity (Bicchieri, 2016; Cialdini et al., 1990; Lahlou, 2018). Our results showed that consumers do not follow the presented normalized behaviour but deviate from that, if exposed to a strong signal that others are behaving unsustainably. The combination of an unsustainable static and unsustainable dynamic norm functions as such a strong signal that seems to motivate consumers to compensate for the bad behaviour of others, by behaving more sustainably themselves (i.e., *social moral cleansing* effect). In study 2, we aim to replicate this effect and to investigate whether the two norm-behaviour regulation strategies of *social moral cleansing* and *social moral licensing* mediate the effect (Brañas-Garza et al., 2013; Lasarov & Hoffmann, 2020). In doing that, study 2 addresses the limitations of study 1. First, study 1 relied solely on a short movie to manipulate social norm communications, which may not capture the full range of how norms are conveyed in everyday life. To overcome this, study 2 employed a different format—written text and images—to manipulate static and dynamic norm communications. This approach reflects more common communication channels (e.g., newspapers, digital media) and strengthens the replication of study 1's effects. Second, study 1 measured sufficiency practices, focusing only on reduction through purchase quantity. Study 2 broadened this by introducing multiple indicators: reduction (items purchased), reuse (second-hand fashion consumption), and policy support (willingness to endorse fashion reduction policies). Finally, study 1 included a broad participant pool without considering shopping habits, leaving open the possibility that some participants shopped exclusively in store with no experience with online platforms. Study 2 addressed this by screening participants to ensure they shop online at least occasionally, thereby increasing the ecological validity of the findings.

4. Study 2

4.1. Methods

4.1.1. Respondents

A total of 290 participants were recruited from Delft University of Technology. Participants who shop exclusively in store were immediately excluded ($N = 40$), leading to 250 respondents who shop online (at least sometimes).⁴ Of those respondents, those who did not pass the first attention check ($N = 2$) or the second ($N = 4$), those who showed no commitment in an open-ended question, admitting that they did not read the news or that they did not have any idea about it ($N = 2$), and those who did not complete the study ($N = 12$) were excluded from data analysis, resulting in a final sample of 230 respondents (60.4 % female; $M_{\text{age}} = 21.21$ years old). Data collection for study 2 took place across 3 days in December 2024.

4.1.2. Manipulations of the static and dynamic norm communications

The same fictitious web shop of clothes was adopted as for study 1. While in study 1, static and dynamic norms were manipulated through a short movie, in study 2, a series of newspaper articles was used. For each condition, respondents were exposed to two newspapers articles, one from a digital newspaper and one from a traditional newspaper. Each article included a piece of text and an image representing the information included in the news. To differentiate between static and dynamic norm, a title was included stating “Present trend” for the static norm, and “Future trend” for the dynamic norm (Fig. 5 and Figure A.1; Appendix A). The two texts for the unsustainable (sustainable) static norm included the following: “Currently, 80 % of Western consumers engage in over-consumption (sufficient consumption): they commonly purchase excessive (parsimonious) amounts of clothes, far more than (only) what they really use and need” and “Recent research indicates over-consumption (sufficient consumption) of fashion items as an accepted and standard

⁴ The type of recruitment did not allow to pre-screen participants based on this condition, therefore exclusively in store shoppers were excluded after data collection.



Condition 2

sustainable static + sustainable dynamic

Digital newspaper

Traditional newspaper

NEWS TODAY

CONSUMPTION TRENDS

Sunday, 3 November 2024

Share Save

PRESENT Sustainable Trend

Currently, 80% of Western consumers are engaging in sufficient consumption; they are commonly purchasing parsimonious amounts of clothes, only what they really use and need.

FUTURE Sustainable Trend

Consumer behaviour is changing for the better: more and more consumers are engaging in sufficient consumption, purchasing less clothes than before.

Present & future of shopping behaviour

9 JAN 2024

Sufficient Consumption: The norm of today

Recent research indicates sufficient consumption of fashion items as an accepted and standard trend in today's western society, where buying parsimoniously is the norm.

Sufficient Consumption: The norm of tomorrow

Consumption practices are getting better: sufficient consumption is expected to be the norm by 2030, when buying parsimoniously will become more common between consumers.

Fig. 5. Stimuli material for condition 1 and 2 of study 2. Full stimuli material available in [Figure A.1, Appendix A](#).

trend in today's western society, where buying excessively (parsimoniously) is the norm".

The two texts for the unsustainable (sustainable) dynamic norm included the following: "Consumer behaviour is changing for the worst (better): more and more consumers are engaging in over-consumption (sufficient consumption), purchasing more (less) clothes than before" and "Consumption practices are getting worst (better): overconsumption (sufficient consumption) is expected to be the norm by 2030, when buying excessively (parsimoniously) will become more common between consumers".

4.1.3. Procedure and measures

Same procedure and instructions as study 1 were applied for study 2. A fictitious story was added before presenting respondents with the two pieces of news, stating that the reading of the news served to better engage in the web shop of clothes and fully immerse in the fashion scenario. Next, the two pieces of news were shown to the respondents, one after each other. A manipulation reinforcement was added to make participants reflect on the news presented, as previously done by Van der Wal et al. (2018). Participants filled in two open questions with the following prompts: "I recognize that currently, it is common to engage in over-consumption (sufficient-based) practices of fashion items when/as ..."; "I recognize that these practices are changing for the worst (better) when/as ...".

Then, respondents were instructed to evaluate a web shop of clothes and to shop as they would have normally done, after having selected their gender assortment. The same instructions as in Study 1 were provided, with the addition of the following sentence: "Shop like you would normally do, choosing from zero to any item you like from each page assortment, with no budget restrictions". This was done to make sure that respondents were aware of the possibilities of selecting zero items from a page, which may have represented a limitation of study 1's set-up. Respondents were then asked to answer a series of questions measuring the dependent variables, mediating factors (social moral licensing and cleansing), individual differences, manipulation and attention checks, control variables and demographic questions.

Dependent variables: Four measurements were recorded and analysed to measure sustainable behaviour. First, the number of fashion items chosen by the respondents was measured and recorded, as in study 1. As sufficient behaviour has been identified not only in the practice of reduced consumption, but also in the practice of reusing and second-hand purchases (Lage, 2022; Speck & Hasselkuss, 2015), willingness to switch to a second-hand item was added as a second measurement for sufficiency. For this purpose, respondents received the following instructions: "You have just selected some brand-new clothes. The web-shop presents you with an option to switch to a second-hand version of the same product. How much cheaper does the second-hand item need to be for you to consider switching? Please use the slider to indicate the percentage discount you would need". The slider included values from 0 % discount (second hand and new item have the same price) to 100 % discount (the second hand item is for free) with increments of 10 %. This format followed the switching behaviour typical of choice-based conjoint analysis or forced choice scales (Guiot & Roux, 2010; Roux & Korchia, 2006; Train, 2009).

To measure whether the social norm interventions triggered some consumption restraints, limiting respondents from buying all the items they liked, a multi-items scale was used (e.g., "I resisted the urge to buy all the items that I liked") adapted from the Frugality Scale (Lastovicka et al., 1999) and the brief self-control scale (Malouf et al., 2014). Items and reliability analysis are included in Table B.1, Appendix B. Lastly, respondents indicated their support for a policy limiting annual fashion purchases to reduce environmental impact. This measure serves as a proxy for sustainable behaviour intentions, as policy support reflects a deeper commitment to systemic change and a willingness to endorse collective action (Peleg Mizrahi and Tal, 2022; Malta et al., 2024). Policy support was asked by answering the question: "How strongly would you support or oppose a government policy that limits the number of

fashion items consumers can purchase in a year to reduce the environmental impact?". This was measured through a 1–7 scale (1: I would strongly oppose, 4: I would neither oppose, nor support, 7: I would strongly support).

Mediator: To explore whether social moral cleansing and licensing function as mediators, respondents were asked to reply to a 4-items seven point scale measuring social moral cleansing (e.g., "After reading about other's behaviour, I feel the need to act quickly to reduce consumption") and a 3-items seven point scale measuring social moral licensing (e.g., "Reading about other's behaviour makes me feel I can relax a bit my own efforts") (1: strongly disagree; 7: strongly agree) and the emotional context related to social moral cleansing (feelings of anxiety, stress or frustration) and licensing (feelings of indifference, unconcern and discouragement).⁵ These emotions were used to understand not only whether social moral licensing/cleansing influence the effects of static and dynamic norms on sustainable consumption practices, but also why this influence occurs (Cyders & Smith, 2008; Fisher-Fox et al., 2024).

Filler task: Some filler measurements were included in the study, measuring the user friendliness, liking of the web shop's assortment and overall rating of the web shop (not analysed).

Manipulation check: Respondents were asked to rate whether the news stated that current consumption practices were ... 1: oriented towards sufficiency/parsimonious consumption -buy little and only what need-, 7: oriented towards over/excessive consumption -buy a lot and more than needed-; for the static norm and, future consumption practices were becoming ... 1: worst/less sustainable, 7: better/more sustainable; for the dynamic norm.

Attention checks: Two attention checks were included, one in the middle of the study asking respondents if they were still paying attention (yes/no) and one in the end, asking them to re-call the behaviour that was the subject of the news read (multiple choice question with options: travelling behaviour, behaviour towards fashion items, eating behaviour, I do not remember).

Control variables: Understandability and realism of the news across conditions were checked based on the question: "The information presented were ... 1: very difficult to understand ... 7: very easy to understand; 1: very unrealistic ... 7: very realistic.

Individual differences and demographics: Measures on individual differences of the respondents (environmental concern and usual shopping behaviour) and demographics were the same as those in study 1. Table 1 presents a summary of all the main measurements.

4.2. Results

4.2.1. Control and manipulation checks

Control checks: Statistical analyses indicated that respondents perceived the news at a good level of understandability ($M = 5.68$; $SD = 1.34$) and realism ($M = 4.64$; $SD = 1.63$). As expected, the news presenting a sustainable static and a sustainable dynamic norm was perceived as less realistic ($M = 3.53$; $SD = 1.54$) than the other news articles, and in particular as less realistic than the news presenting an unsustainable static and an unsustainable dynamic norm ($M = 5.59$; $SD = 1.30$; $p < .001$).

Manipulation check: Independent-samples t-tests showed that both manipulations were successful. The news articles including a sustainable static norm were rated as much less oriented towards over- and excessive consumption ($M = 3.35$; $SD = 1.79$), in comparison to the news articles that included an unsustainable static norm ($M = 6.26$; $SD = 0.84$; $t(228) = 15.76$, $p < .001$; Cohen's $d = 1.40$). Similarly, the news articles that included a sustainable dynamic norm were indicated as showing better and more sustainable future consumption practices ($M =$

⁵ Opposite poles labelled (1: very relaxed ... 7: very anxious; 1: very calm ... 7: very stressed; etc.). Manipulation of social norms was re-presented to the respondents before the mediator variables.

5.91; SD = 0.96), than the news articles that included an unsustainable dynamic norm ($M = 2.12$; SD = 1.38; $t(228) = -23.94$, $p < .001$; Cohen's $d = 1.20$).

4.2.2. The effect of static-and-dynamic norm communications on sufficiency behaviour

To test the effect of the four static and dynamic norm communications on the number of items chosen by respondents, a 1x4 independent ANOVA was conducted ($F(3, 226) = 1.58$; $p = .19$; part $\eta^2 = 0.02$) with a post-hoc test and planned contrasts, as for study 1. Results of the post-hoc test confirmed the results of study 1: respondents chose a lower number of items when exposed to the combination of an unsustainable static and unsustainable dynamic norm communication ($M = 7.36$; SD = 5.20) than when exposed to the combination of an unsustainable static and sustainable dynamic norm ($M = 9.34$; SD = 5.34; $p = .05$, Fig. 4). In addition, a marginally significant difference was found between the condition “unsustainable static + unsustainable dynamic” and its opposite, “sustainable static + sustainable dynamic” ($M = 9.14$; SD = 5.16; $p = .07$).

The results of the planned contrasts confirmed the results of the post-hoc test and align with study 1: the *unsustainable static + unsustainable dynamic* condition significantly differed from the other three conditions, $t(111.37) = -2.11$, $p = .037$, $d = 0.40$, $r = 0.20$, indicating that participants in the unsustainable static + unsustainable dynamic condition selected fewer items than those in the other conditions. The *sustainable static + sustainable dynamic* condition did not differ from the remaining three conditions $t(103.98) = 0.88$, $p = .38$, $d = 0.17$, $r = 0.09$.

ANCOVA results showed that the individual's environmental concern ($F(1, 230) = 6.40$; $p = .01$; part $\eta^2 = 0.03$) significantly affected the number of items chosen by the respondents, independently from the social norm intervention. Specifically, the higher the environmental concern, the lower was the number of items chosen ($\beta = -0.17$; $t = -2.63$; $p = .009$). No significant effects were observed for usual shopping behaviour, contrary to study 1 results. Gender significantly affected the number of items chosen, as females chose on average less items than males ($\beta = -0.24$; $t = -3.71$; $p < 0.001$). For females, the effect of the social norm interventions was stronger and variances between conditions larger (p -values become smaller). These results differ from the results on the covariates of study 1 where differences in gender and environmental concern did not impact the number of items chosen.

Results on the effect of social norm interventions on second hand switching behaviour ($F(1, 230) = 0.30$; $p = .83$) and reflection on

restrictive parsimonious behaviour ($F(1, 230) = 0.77$; $p = .51$) did not show significant effects.

4.2.3. The effect of static-and-dynamic norm communications on policy support for reduction

To test the effect of the four static and dynamic norm communications on the respondents' support to a government policy that limits the number of fashion items consumers can purchase in a year, a 1x4 independent ANOVA was conducted ($F(3, 226) = 2.32$; $p = .07$; part $\eta^2 = 0.03$) with a post-hoc test and planned contrasts. The results of the post-hoc test showed that respondents who were exposed to the combination of an unsustainable static and an unsustainable dynamic norm indicated to be more willing to support the policy for consumption reduction ($M = 4.03$; SD = 1.87) in comparison to respondents exposed to its opposite, the combination of a sustainable static and sustainable dynamic norm ($M = 3.21$; SD = 1.83; $p = .01$). No other significant differences were observed between the other social norm combinations.

The results of the planned contrasts confirmed the results of the post-hoc test, demonstrating significantly higher policy support for consumption reduction in the *unsustainable static + unsustainable dynamic* condition, $t(100.94) = 2.01$, $p = .047$, $d = 0.40$, $r = 0.20$, compared with the other conditions. On the contrary, policy support for consumption reduction was lower in the *sustainable static + sustainable dynamic* condition, $t(95.59) = -1.99$, $p = .050$, $d = 0.41$, $r = 0.20$, compared with the other conditions.

The results so far show that the measures of sufficiency behaviour (N of items chosen) and of sufficiency intention (support for sufficiency-related policies) are aligned: the social norm intervention combining an unsustainable static norm with an unsustainable dynamic norm proved most effective in promoting sufficiency-oriented responses, both in terms of expressed support for consumption reducing policies and in the reduction of actual purchases.

4.2.4. The role of social moral cleansing and social moral licensing (and the related emotional context)

To investigate whether social moral cleansing and licensing mediate the effect of social norm communications on sustainable behaviour (i.e., number of fashion items selected and on policy support for reduction), a series of mediation analysis were conducted with PROCESS MACRO in SPSS, Model 4 with multi-categorical independent variable (Spiller et al., 2013). As certain emotions may anticipate or co-occur with social moral cleansing/licensing, these emotions were added in the analysis

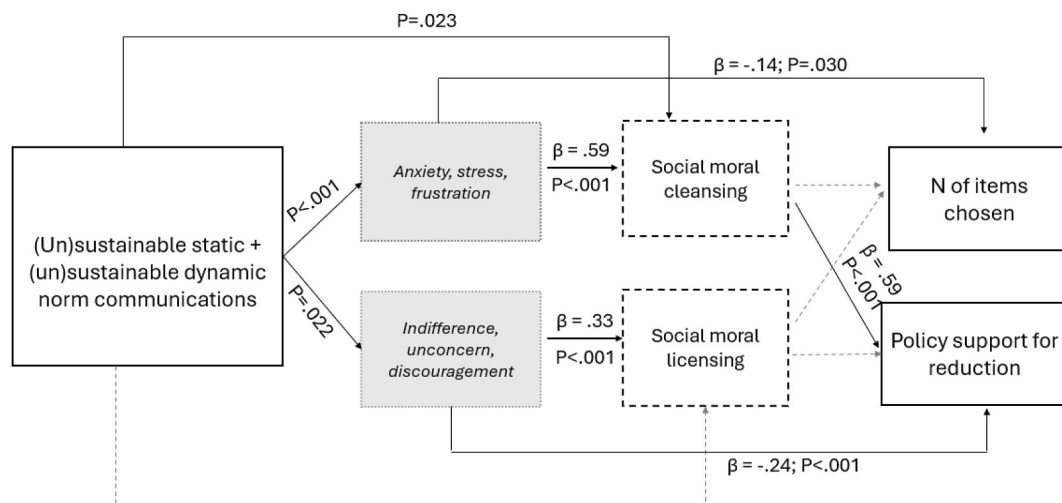


Fig. 6. Regression model with static and dynamic social norm communications as independent variable, social moral cleansing and licensing (and their emotional context) as mediators and two dependent variables (N of items chosen by respondents and support to policy for consumption reduction). Dotted lines show non significance at $p > .05$.

(anxiety, stress, frustration related with social moral cleansing, and indifference, unconcern and discouragement related with social moral licensing).

The mediation analysis with social moral cleansing showed that different static and dynamic norm communications differently triggered the emotional context related with social moral cleansing ($t = -1.97$; $SE = 0.41$; $p = .050$; $LLCI = -1.642$; $ULCI = -0.001$). Respondents exposed to the “unsustainable static + unsustainable dynamic” condition experienced a higher level of social moral cleansing related emotions ($M = 4.86$), in comparison to consumers exposed to the “sustainable static + sustainable dynamic” condition ($M = 3.52$; $p < .001$; $LLCI = -1.687$; $ULCI = -0.98$) and “unsustainable static and sustainable dynamic” condition ($M = 4.49$; $p = .045$; $LLCI = -0.733$; $ULCI = -0.008$). Consequently, respondents felt the urge to “clean” and compensate for others’ unsustainable behaviour, behaving more sustainably in return (social moral cleansing effect). In fact, higher levels of anxiety, stress, and frustration were associated with 1) stronger social moral cleansing effect ($B = 0.57$; $SE = 0.07$; $\beta = 0.50$; $t = 8.68$; $p < .001$), 2) lower number of fashion items selected by respondents ($B = -0.72$; $SE = 0.33$; $\beta = -0.14$; $t = -2.18$; $p = .03$), and 3) greater support for reduction policy ($B = 0.48$; $SE = 0.11$; $\beta = 0.28$; $t = 4.49$; $p < .001$). While the social moral cleansing related emotions mediate the effect of social norm communications on the number of items chosen by respondents, the cleansing effect per se (measured through the 4-item scale) leads to greater willingness to policy support for reduction ($B = 0.60$; $SE = 0.09$; $\beta = 0.41$; $t = 6.81$; $p < .001$; $LLCI = 0.329$; $ULCI = 0.729$), but does not result in actual sustainable behaviour, purchasing fewer items ($B = -0.06$; $SE = 0.29$; $\beta = -0.014$; $t = -0.21$; $p = .84$; $LLCI = -0.329$; $ULCI = 0.978$) (Fig. 6 and table C.1, C.2, C.3, Appendix C).

The mediation analysis with social moral licensing showed no significant effects on the number of fashion items chosen and policy support. In addition, no differences were observed across interventions on social moral licensing. Nevertheless, results showed that higher levels of social moral licensing related emotions (indifference, unconcern and discouragement) had two main consequences: 1) significantly increased social moral licensing ($B = 0.33$; $SE = 0.08$; $\beta = 0.26$; $t = 4.15$; $p < .001$), and 2) significantly decreased support to policy aimed at consumption reduction ($B = -0.49$; $SE = 0.13$; $\beta = -0.24$; $t = -3.79$; $p < .001$) (Fig. 6 and table C.1, C.2, C.3, Appendix C).

4.3. Discussion study 2

The results of Study 2 replicate and extend the findings of Study 1, showing that consumers exposed to a combination of unsustainable static and unsustainable dynamic norms behaved more sustainably than those in other conditions. Specifically, these participants selected fewer items in the shopping task and expressed greater support for a policy aimed at reducing consumption. This results was demonstrated by both post hoc analyses and planned contrasts, even though the main effect of social norm intervention in the one-way analysis of variance did not reach statistical significance. Examining post hoc effects remains methodologically justified as it allows for identification of meaningful patterns that may not be captured by the overall test. Importantly, the post hoc analyses and planned contrasts served distinct purposes, exploratory versus hypothesis-driven, yet produced convergent results, providing robust support for the positive effect of the combined unsustainable static and unsustainable dynamic norm intervention on sufficiency behaviour.

Overall, the results showed that communicating others’ unsustainable behaviours—such as excessive consumption—through both static and dynamic norms served as a powerful signal that motivated action rather than inaction, and promoted norm-behaviour differentiation rather than conformity. Study 2 also explored the underlying

mechanism which might drive these effects, rooted in the norm-behaviour regulation strategy of social moral cleansing. In fact, the exposure to others’ unsustainable behaviours elicited greater anxiety, stress, and frustration, emotions typically associated with social moral cleansing, which increased participants’ sense of urgency to act and to behave more sustainably. In addition, the social moral cleansing effect increased participants’ support to a governmental policy aimed at consumption reduction.

5. General discussion and implications

5.1. Theoretical implications

Our fundings contribute to research in environmental psychology and consumer behaviour by investigating how static and dynamic norms, combined in the same piece of communication, affect sustainable consumer behaviour, towards reduction in fashion consumption. In doing that, this research enriches the existing literature on social norms, which has predominantly studied static-only or dynamic-only normative influences (Aldoh et al., 2024; Loschelder et al., 2019; Sparkman & Walton, 2017). Contributing to research in communication strategies, this paper shows the potential that communication can have in normative social influences. Although scholars explicitly emphasized norms as “communication phenomena”, the communicative dimension of norms “has yet to receive sustained theoretical [...] attention” (Geber & Hefner, 2019; Hogg & Reid, 2006; Rimal & Lapinski, 2015; Yanovitzky & Rimal, 2006). Building on previous studies that, for example, examined how a canteen poster depicting either a static or a dynamic norm influences eating behaviour and food choices (Loschelder et al., 2019), this research explores the combined effect of real-life static-and-dynamic norm messages through three different communication channels: a movie, a digital news and a more traditional newspaper layout. Focusing on the fashion scenario, we investigate all the possible combinations of these messages with either matching or mismatching sustainability framings.

By exploring whether static-and-dynamic norm communications affect the likelihood to conform to or differentiate from the social norm communicated, this research adds empirical evidence to two conflicting theories: while the principle of social proof and the broader literature on social norms indicate that individuals tend to conform to standard behaviours within their social context (Davis et al., 2015; Thøgersen, 2006; White & Simpson, 2013; Yamin et al., 2019), theories on social moral licensing and cleansing suggest behaviour inconsistency, implying that people may deviate from past or observed typical behaviours (Branas-Garza et al., 2013; Lasarov et al., 2022). Addressing these controversial perspectives, our results demonstrates, through two lab studies, that consumers diverge from a normalized unsustainable behaviour, when such a behaviour is integrated in a static-and-dynamic norm communication, functioning as a strong signal that relevant others (in the same social context) are engaging in unsustainable practices and that this trend is worsening. In this regard, our research responds to Cialdini’s (2003) observation that, while “it is widely recognized that communications that activate social norms can be effective in producing societally beneficial conduct, not so well recognized are the circumstances under which normative information can backfire to produce the opposite”. This research proposes social moral licensing and cleansing as interrelated norm-behaviour regulation mechanisms that may help explain when and why normative information leads to behavioural divergence rather than conformity, thus acting as potential boundary conditions for the effects of social norm exposure. Importantly, our findings suggest that communications highlighting “negative” social norms—indicating that others are behaving unsustainably—can still promote sustainable behaviour, particularly when they evoke emotional responses associated

with social moral cleansing.

These results enhance the current understanding on social moral licensing and cleansing effects. While past research has predominantly studied these effects in the context of self-behaviour regulation (Brañas-Garza et al., 2013; Gholamzadehmir et al., 2019; West & Zhong, 2015), observing whether people conform to or deviate from their past moral or immoral behaviours, our research integrates a social dimension to these constructs, by studying people's behaviour in relation to others, rather than the self. This shift from intrapersonal to interpersonal regulation highlights the potential for moral restoration processes to be triggered not only by personal transgressions, but also by the perceived moral failings of one's social group, as part of a broader (moral) norm-behaviour compensation mechanism. This rather novel perspective not only opens up for further research on social moral licensing and cleansing effects, but also deepens the understanding of social norms effects as real leverages for sustainable behavioural changes, through the potential mediating role of social moral licensing and cleansing. Future research could further explore the collective dimension of social moral cleansing by examining its impact not only on individual behaviour (e.g., sustainable consumption choices) but also on broader psychological orientations, such as policy support and collective action. This would align with research on spillover effects (e.g., Maki et al., 2019; Thøgersen, 1999), which suggests that moral responses in one domain may generalize to other forms of pro-environmental engagement, potentially amplifying the societal impact of normative interventions.

Last, our research adds to the sustainability literature and provides an alternative perspective to the hypothesis of consumer pro-environmental inaction due to climate change anxiety and "green fatigue" (Clayton, 2020; VanDeveer, 2003). In particular, by investigating the emotional context related to social moral cleansing and licensing as a potential mediator, this research contributes to understand which role climate-related emotions may play in the context of pro environmental decisions and sustainable behaviour in fashion. While in the climate anxiety debate, one prediction supports the view that severe climate anxiety can induce a state of paralysis and restrain one's ability to act, due to overpowering feelings of hopelessness and uselessness (Innocenti et al., 2023; Usher et al., 2019), an alternative prediction supports the opposite, namely that individuals may undertake actions to mitigate climate change as a coping mechanism (Innocenti et al., 2023; Ogunbode et al., 2022). Our research adds scientific evidence in support to the latter prediction, showing how the communication of a normalized unsustainable behaviour of others can trigger a "productive" level of anxiety and other related emotions that actually benefit, instead of harm, pro-environmental action. In this context, consumers feel a sense of urgency to clean and regulate the bad behaviour of others.

5.2. Practical and societal implications

Our findings might be of use for policy makers, marketers and designers involved in developing pro-environmental communications or interventions. Our results show how the combination of static and dynamic norm messages can be used at the advantage of sustainable behaviour and which combinations can be more effective. We revealed that the theoretically plausible strategy of conveying messages that emphasize the positive sustainable behaviour of others with the assumption that people will follow this positive normalized behaviour can be actually ineffective as consumers may feel less urgency to act pro-environmentally or to support an environmental policy. Policymakers, marketers and designers could opt to create social norm interventions or communication campaigns, for example in the form of warning messages on social commerce sites (analogous to those found on cigarettes

packaging) that highlight, through both static and dynamic norms, the prevalent unsustainable behaviour of others. In the context of fashion, these interventions may emphasize how many consumers are actually engaging with over-consumption practices, purchasing far more than needed, and how these unsustainable practices are expected to get worst in the future, as even more normalized and standard behaviours among future consumers. Our results suggest that these interventions can be effective when they target the emotional context related to social moral cleansing. Specifically, by eliciting a productive degree of frustration, stress or anxiety, such messages may motivate consumers toward more sustainable fashion consumption. Building on the findings of Malta et al. (2024) on the combined vs isolated effects of static/dynamic norms and the social moral licensing theory, we propose that this requires the combination of static and dynamic norms within the same communication. When used in isolation, static or dynamic norms may fail to convey a sufficiently strong signal of others' unsustainable behaviour, potentially leading to norm-behaviour conformity rather than driving differentiation or behaviour change. This may also help explain why previous social norm research (Borg et al., 2020; Loschelder et al., 2019; Pristl et al., 2021; Sparkman & Walton, 2017), focusing on either static or dynamic norms in isolation, has primarily supported the norm-behaviour conformity hypothesis. However, further research is necessary to build robust evidence in this area, and to establish the relative effectiveness of combined versus isolated norm strategies in different contexts.

As sustainability is becoming an increasingly important criterion in consumer decision making (Granato et al., 2022b), policymakers, marketers and designers need to find new communication strategies to guide consumer behaviour, either towards greener alternatives (e.g., adopting solar panels, public transport), either, and probably more importantly, towards sufficiency and consumption reduction (e.g., repairing, reusing, sharing principles, and cutting excessive consumption). Although the reductionist approach is often met with resistance by businesses driven by sales and profit, this approach is now a political priority (European Green Deal and the Circular Economy Action Plan) (Resolution, 2015), as, whether by choice or necessity, a significant reduction in consumption is an inevitable step towards sustainable development goals. Nevertheless, effective interventions to steer consumers towards consumption reduction of highly polluting products and services are still scarce. This research develops and tests such a theory-based intervention and finds promising effects across two studies as a step forward to encourage reduction of fashion consumption.

5.3. Limitations and avenues for future research

The present research presents some limitations. First, this study uses a fictitious web shop and, while simulating a realistic shopping context, it does not include all the features that existing online fashion platforms include. For example, while existing web shops allow users to select items that first flow into a basket of preferences and only later, based on a follow up selection, are actually considered for the final choice, the web shop in our studies did not include this two-step procedure. This may have led participants to select a higher numbers of clothes than what they would have actually bought in real life. In fact, the average number of items selected was rather high across all conditions. Further research could test the influence of normative messages in a more realistic set-up, for example in a field study with an already existing online shopping platform. Similarly, future studies could integrate the role of social media as a form of social norm communications, rather than with digital and traditional newspaper articles, as in our research. In addition, since the objective of our research concerned static and dynamic social norms, our stimuli material reflected this objective and

did not include any variations in terms of descriptive and injunctive norms, which impact norm-behaviour conformity versus differentiation (Cialdini, 2003; Demarque et al., 2015) and may be integrated in future research avenues. This integration may also contribute to explain the boundary conditions for the social moral cleansing effect to occur. It indeed might be the case that social moral cleansing is particularly likely to occur when there is a discrepancy between descriptive and injunctive norms, when what people observe or expect the collective to do (descriptive norms) is worse than what is morally or socially expected (injunctive norms). In our research, participants in the *unsustainable static + unsustainable dynamic norm* condition might have perceived that the group's future behaviour will be even worse than the already problematic present behaviour, making the moral discrepancy especially salient. This might have stressed their motivation to act, leading to compensatory actions (social moral cleansing).

Furthermore, our studies relied on convenience sampling with younger and higher educated participants in one country only, the Netherlands. While this group is often more sensitive to sustainability issues, our findings did not reflect a reduced inclination to purchase large quantities of fashion items. While our sample provided valuable insights into how younger generations from a Western-European background, who are often frequent consumers of fast fashion, respond to pro-environmental interventions, future research should aim to replicate these effects with more diverse socio-cultural groups. Cultural and societal factors play a crucial role in shaping social norms and influencing the extent to which individuals conform to or diverge from them. Thus, it would be beneficial for future studies to explore alternative contexts where practices like repairing or sharing clothing are more normative, rather than overconsumption of fast-fashion. Similarly, although a control group (e.g., no intervention or baseline condition) was not included in the present research due to its primary objective on comparing the combined effects of static and dynamic norms framings, and prior evidence supporting the general efficacy of normative messages (e.g., Malta et al., 2024), future studies may add a control condition to provide a clearer benchmark, making the differences between interventions (and non-intervention) more pronounced.

6. Conclusion

The present research provides consistent evidence across two lab studies on how the exposure to static-and dynamic norm communications can effectively encourage sustainable behaviour, towards consumption reduction of fashion. By employing various forms of social norm communications (a movie, digital news, and a traditional newspaper format) and diverse measures of consumer responses towards

sufficiency, including policy support for consumption reduction and actual purchasing behaviour in a fictitious web shop of clothes, this study highlights the combined effect of unsustainable static and unsustainable dynamic social norm communication as a powerful strategy to reduce fashion consumption and *social moral cleansing* as the potential underlying process for its effectiveness. Besides contributing to the understanding of normative influences on consumer behaviour, the results of this research provide a foundation for policy initiatives aimed at limiting excessive consumption of highly polluting products and services such as fast fashion, to support environmental protection efforts.

CRediT authorship contribution statement

Giulia Granato: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Ruth Mugge:** Writing – review & editing, Supervision, Project administration, Conceptualization.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used ChatGPT (OpenAI) in order to improve the readability of certain sections of the manuscript (language polishing). After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Declaration of competing interest

None.

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Appendix A. stimuli study 1 and 2

Table A1
links of the movies presented in study 1 as manipulation of static-and-dynamic social norms

Conditions	Movie links
Unsustainable static + unsustainable dynamic	https://youtu.be/izqCXdR5VRM
Sustainable static + sustainable dynamic	https://youtu.be/d-pitHG0IU0
Unsustainable static + sustainable dynamic	https://youtu.be/KzOlnIjzkVs
Sustainable static + unsustainable dynamic	https://youtu.be/B2pltqL2DzY

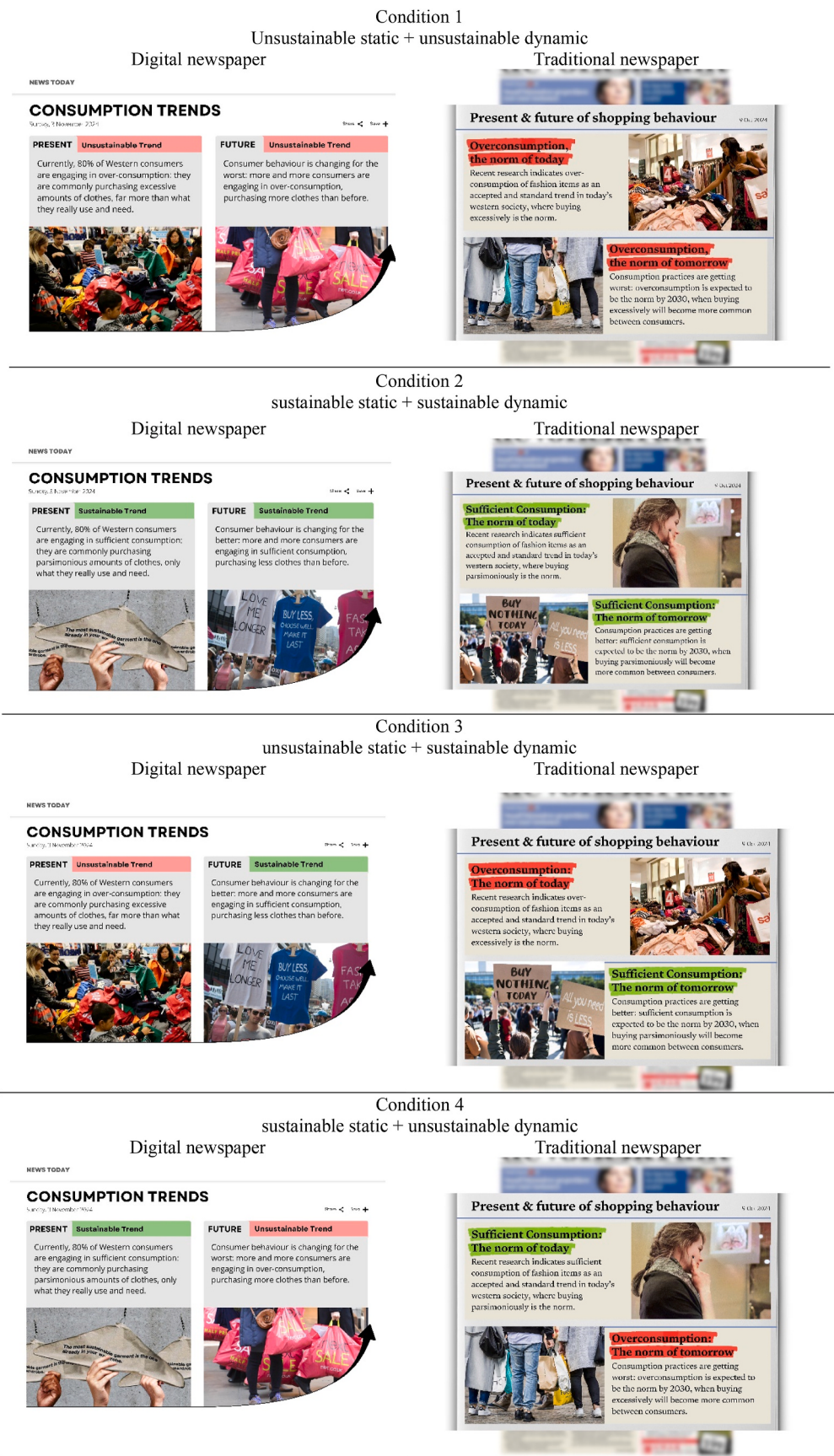


Fig. A.1. Complete stimuli material for Study 2.

Appendix B. results study 1 and 2

Table B1

Multi-items scales used in study 1 and 2 with items and reliability analysis

Scales	Items number	Cronbach alpha-STUDY 1	Cronbach alpha-STUDY 2
Environmental concern (study 1 and 2)	3	0.73	0.71
1. I normally make a conscious effort to limit my use of products that are made of scarce resources			
2. I have switched products for ecological reasons			
3. When I have a choice between two equal products, I always purchase the one that is less harmful to other people and the environment			
Usual shopping behaviour (study 1 and 2)	8	0.72	0.77
1. I feel driven to shop and spend, even when I don't have the time or the money			
2. I tend to shop excessively			
3. I go on a buying binge when I'm upset, disappointed, depressed, or angry			
4. I buy things I don't need or won't use			
5. I sometimes feel the need to go shopping			
6. I get little or no pleasure from shopping (reversed)			
7. I hate to go shopping (reversed)			
8. I feel guilty or ashamed after I go on a buying binge or buy excessively (reversed)			
Social moral cleansing scale (study 2)	4	Not used	0.84
1. After reading about other's behaviour, I feel the need to act quickly to reduce consumption			
2. Knowing what others are doing, makes me realize that immediate action is critical for climate protection			
3. I feel more pressure to act urgently, after reading about what other people are doing			
4. I feel a greater responsibility to change my own behaviour, after reading about other actions			
Social moral licensing scale (study 2)	3	Not used	0.78
1. Reading about other's behaviour makes me feel I can relax a bit my own efforts			
2. I feel less urgency to act immediately, because I believe others are already contributing enough			
3. Since others are making an effort for the environment, I don't feel as pressured to change my behaviour right now			
Shopping behaviour restriction scale (study 2)	4	Not used	0.69
1. I bought fewer items than I wanted to in order to save money or resources			
2. I resisted the urge to buy all the items that I liked			
3. I limited my purchases even though I wanted to buy more			
4. I feel I acted conservatively in my purchases by only buying what was absolutely necessary			

Table B2

Descriptives of the respondents for study 1 and 2

Descriptives	Sample study 1 (N = 273)		Sample study 2 (N = 230)	
Gender	Frequencies	Percentages	Frequencies	Percentages
- Female	Freq. = 150	% = 54.9	Freq. = 139	% = 60.4
- Male	Freq. = 120	% = 44.0	Freq. = 88	% = 38.3
- Non binary	Freq. = 2	% = 0.7	Freq. = 2	% = 0.9
- Prefer not to say	Freq. = 1	% = 0.4	Freq. = 1	% = 0.4
Nationality				
- Dutch	Freq. = 213	% = 83.5	Freq = 175	%76.1
- Other	Freq. = 60	% = 16.5	Freq = 55	% = 23.9
Age	Mean (standard deviation)		Mean (standard deviation)	
Environmental concern	M = 22.85 (5.67)		M = 21.21 (2.96)	
Usual shopping behaviour	M = 4.19 (1.47)		M = 4.40 (1.31)	
N of items	M = 3.45 (0.99)		M = 3.5 (1.09)	
	M = 8.63 (5.54)		M = 8.58 (5.44)	

Appendix C. results on mediation paths-study 2

Table C1
The effect of the four social norm communications on social moral cleansing and related emotions (feeling of anxiety, stress, frustration) and social moral licensing and related emotions (feelings of indifference, unconcern and discouragement).

DVs	Static and dynamic social norms communications. Means (SE)				F test
	Unsustainable static + unsustainable dynamic N = 61	Sustainable static + sustainable dynamic N = 58	Unsustainable static + sustainable dynamic N = 52	Sustainable static + unsustainable dynamic N = 59	
Social moral cleansing related emotions	4.86 _a (0.12)	3.52 _b (0.13)	4.49 _{c,e} (0.13)	4.38 _{d,e} (0.13)	F (3,226) = 19.71; p < .001; $\eta^2 = 0.21$
Social moral cleansing (scale)	4.79 _a (0.16)	4.12 _{b,c} (0.16)	4.65 _{a,d} (0.17)	4.47 _a (0.16)	F (3,226) = 3.27; p = .022; $\eta^2 = 0.04$
Social moral licensing related emotions	3.85 _a (0.11)	3.42 _{b,c} (0.12)	3.74 _a (0.12)	3.88 _{a,d} (0.12)	F (3,226) = 3.25; p = .02; $\eta^2 = 0.04$
Social moral licensing (scale)	2.33 _a (0.14)	2.43 _a (0.14)	2.36 _a (0.15)	2.71 _a (0.14)	F (3,226) = 1.42; p = .237

Different subscript letters indicate significant difference between conditions at p < .05 (LSD adjustment).

Table C2
The effect of the emotional context related to social moral cleansing and licensing on social moral cleansing and licensing effect, number of items purchased by respondents and policy support for reduction.

Emotional context (feelings of stress, frustration, anxiety)					
	B	SE	β	t	p
Social moral cleansing	0.57	0.07	0.50	8.68	<0.001
N of items	-0.72	0.33	-0.14	-2.18	0.030
Policy support	0.48	0.11	0.28	4.49	<0.001
Emotional context (feelings of unconcern, indifference, discouragement)					
	B	SE	β	t	p
Social moral licensing	0.33	0.08	0.26	4.15	<0.001
N items	0.22	0.40	0.04	0.54	0.59
Policy support	-0.49	0.13	-0.24	-3.79	<0.001

Table C3
The effect of social moral cleansing and social moral licensing on the number of fashion items chosen by respondents and on the policy support for reduction.

Social moral cleansing (scale)					
	B	SE	β	t	p
N of items	-0.06	0.29	-0.014	-0.21	0.84
Policy support	0.60	0.09	0.41	6.81	<0.001
Social moral licensing (scale)					
	B	SE	β	t	p
N items	0.49	0.32	0.10	1.51	0.13
Policy intention	-0.18	0.11	-0.11	-1.68	0.094

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